



Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

JUL 15 2004



Mr. Steve Zappe, Project Leader
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Bldg. 1
Santa Fe, New Mexico 87505-6303

Subject: Transmittal of the Certification Audit Report for the Los Alamos National Laboratory (A-04-05)

Dear Mr. Zappe:

This letter transmits the Los Alamos National Laboratory (LANL) Audit Report for the processes performed to characterize and certify waste utilizing the services of the Washington TRU Solutions (WTS) Central Characterization Project (CCP) as required by Section II.C.2.c of the WIPP Hazardous Waste Facility Permit. The report contains the results of the certification audit performed for the processes for the characterization and certification of waste. The audit was conducted April 26-30, 2004.

An electronic version of audit documentation (Final Audit Report, B-6 Checklists, and the audited plans and procedures) is included as a courtesy for use by NMED, but is not to be regarded as the formal submittal.

I certify under penalty of law that this document and all enclosures were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Please contact the CBFO Quality Assurance Manager, Ava L. Holland, at (505) 234-7423 should you have any questions concerning this audit report.

Sincerely,

R. Paul Detwiler
Acting Manager

Enclosure



Mr. Steve Zappe

-2-

JUL 15 2004

cc: w/enclosure
WTS Operating Record
C. Walker, TechLaw
CBFO QA File
CBFO M&RC

| | |
|--------------------|-----|
| cc: w/o enclosure | |
| A. Holland, CBFO | *ED |
| D. Miehl, CBFO | *ED |
| M. Navarrete, CBFO | *ED |
| K. Watson, CBFO | *ED |
| R. Knerr, CBFO | *ED |
| J. Nunz, DOE-LASO | *ED |
| J. Kieling, NMED | *ED |
| J. Bearzi, NMED | *ED |
| S. Holmes, NMED | *ED |
| S. Warren, WTS | *ED |
| D. Haar, WTS | *ED |
| A. Fisher, WTS | *ED |
| S. Harrison, CTAC | *ED |
| L. Greene, WRES | *ED |

U.S. DEPARTMENT OF ENERGY
CARLSBAD FIELD OFFICE

FINAL AUDIT REPORT
OF THE
LOS ALAMOS NATIONAL LABORATORY
UTILIZING THE
CENTRAL CHARACTERIZATION PROJECT

Los Alamos, New Mexico

AUDIT NUMBER A-04-05

April 26 – 30, 2004

FINAL AUDIT REPORT OF WASTE CHARACTERIZATION IN
ACCORDANCE WITH THE HAZARDOUS WASTE FACILITY PERMIT



Prepared by: Charles L. Riggs

Charles L. Riggs for
Earl Bradford, CTAC
Audit Team Leader

Date: 7/15/04

Approved by: Martin P. Navarrete

Ava L. Holland, CBFO
Quality Assurance Manager

Date: 7-15-04

1.0 EXECUTIVE SUMMARY

The Central Characterization Project (CCP) was developed by Washington TRU Solutions (WTS) to provide transuranic (TRU) waste characterization, certification, and transportation services to TRU waste generator sites. These services include the management and administrative controls necessary to ensure the provided services are in compliance with regulatory requirements. The CCP provides these services under contract to those waste generator sites that request support or lack the expertise, program infrastructure, or equipment to characterize TRU waste for shipment to and disposal at the Waste Isolation Pilot Plant (WIPP).

Carlsbad Field Office (CBFO) Audit A-04-05 was conducted at Los Alamos National Laboratory (LANL), April 26 – 30, 2004, to evaluate the CCP characterization and certification services that were contracted to the University of California. This audit was conducted to evaluate the CCP TRU waste characterization and certification activities related to Summary Category Group S3000 (homogeneous solid waste) and S5000 (debris waste). The audit team assessed the adequacy, implementation, and effectiveness of the technical and quality assurance (QA) activities.

The audit scope included assessment of the physical characterization processes and activities being conducted on behalf of LANL. The activities evaluated included characterization with mobile real-time radiography (RTR) equipment, visual examination (VE), including the VE technique, headspace gas (HSG) sampling using sample canisters and HSG analysis on-site using an Entech-Agilent analysis system, and analysis off-site using an independent analysis laboratory. The process for developing acceptable knowledge (AK) documentation was also evaluated.

The audit team concluded that the CCP technical and QA procedures were adequate relative to the flow-down of requirements from the CBFO Quality Assurance Program Document (QAPD), the Waste Analysis Plan (WAP) of the WIPP Hazardous Waste Facility Permit (HWFP), and the WIPP Waste Acceptance Criteria (WAC). The audit team also concluded that the assessed activities were being satisfactorily implemented in accordance with the CCP Quality Assurance Project Plan (QAPjP) and the implementing procedures, with the exception of the processes related to Project-Level Data Verification and Validation, and Records Management, which were determined to be marginally implemented. The established technical processes and the QA program were determined to be effective, except for those aforementioned processes that were determined to be marginally effective.

The audit team identified three conditions adverse to quality (CAQs) that resulted in the issuance of two CBFO corrective action reports (CARs). One isolated deficiency requiring only remedial corrective actions was corrected during the audit (CDA). Two Observations and one Recommendation were identified and were offered for LANL/CCP management consideration. The CARs, CDA, Observations, and Recommendation are described in sections 6 and 7, respectively.

2.0 SCOPE AND PURPOSE

2.1 Scope

The audit team evaluated the adequacy, implementation, and effectiveness of the LANL/CCP TRU waste characterization processes for retrievably stored debris and homogeneous solid waste relative to the requirements contained in the WIPP HWFP, Attachments B through B6. Compliance was documented by completing the appropriate B6 checklists for the applicable LANL/CCP activities.

The audit team evaluated the following program elements in accordance with the HWFP.

Quality Assurance

Nonconformance/Corrective Action
Personnel Qualification and Training
Documents and Records
Sample Control

Technical

Data Generation-Level and Project-Level Validation and Verification (V&V)
Acceptable Knowledge (AK)
Real-Time Radiography (RTR)
Visual Examination (VE)
Headspace Gas (HSG) Sampling and Analysis
WIPP Waste Information System (WWIS)
Waste Stream Profile Forms (WSPFs)

The evaluation of LANL/CCP TRU waste activities and documents was based on current revisions of the following documents:

Hazardous Waste Facility Permit Waste Isolation Pilot Plant EPA No. NM4890139088, New Mexico Environment Department

CBFO Quality Assurance Program Document, DOE/CBFO-94-1012

CCP Transuranic Waste Quality Assurance Characterization Project Plan (QAPjP), CCP-PO-001

CCP Transuranic Waste Certification Plan, CCP-PO-002

CCP / LANL Interface Document, CCP-PO-012

Related LANL/CCP technical and quality assurance implementing procedures

2.2 Purpose

Audit A-04-05 was conducted to assess the compliance of LANL/CCP debris and homogeneous solids waste characterization and certification activities with WIPP HWFP requirements.

3.0 AUDIT TEAM AND OBSERVERS

AUDITORS/TECHNICAL SPECIALISTS

| | |
|------------------|--|
| Dennis Miehl | CBFO QA Representative |
| Martin Navarrete | CBFO QA Representative |
| Earl Bradford | Audit Team Leader, CBFO Technical Assistance Contractor (CTAC) |
| Charlie Riggs | Auditor, CTAC |
| Steve Calvert | Auditor/CTAC QA Manager |
| Priscilla Dugger | Auditor, CTAC |
| Tammy Bowden | Auditor, CTAC |
| Porf Martinez | Auditor, CTAC |
| Norman Frank | Auditor, CTAC |
| Patrick Kelly | Nondestructive Assay (NDA) Technical Specialist, CTAC |
| Wayne Ledford | RTR/VE Technical Specialist, CTAC |
| BJ Verret | HSG Technical Specialist, CTAC |
| Dick Blauvelt | AK Technical Specialist, CTAC |

OBSERVERS

| | |
|--------------|--|
| Steve Holmes | New Mexico Environment Department (NMED) |
| Kevin Krause | NMED |
| Carl Chavez | NMED |

AUDIT PARTICIPANTS

LANL and LANL/CCP individuals involved in the audit are identified in Attachment 1. A preaudit meeting was held at LANL, Technical Area (TA) #21, Building 210, Room 142, on April 26, 2004. Daily meetings were held with LANL/CCP management to discuss the progress of the audit and potential deficiencies. The audit was concluded with a postaudit conference held in the Oppenheimer Building, Room 213, on April 30, 2004.

5.0 SUMMARY OF AUDIT RESULTS

5.1 Program Adequacy and Implementation

This audit was performed to assess the ability of LANL/CCP to characterize waste from Summary Category Groups S3000 and S5000 to the requirements specified in the WIPP WAP. The audit team assessed AK, HSG, VE, and RTR characterization

methods, as well as data review, validation, data quality objectives (DQO) reconciliation, WWIS data entry, and the preparation of WSPFs.

The audit team concluded that the applicable TRU waste characterization activities, as described in the associated LANL/CCP implementing procedures, satisfactorily meet the requirements contained in the HWFP. The deficiencies identified in section 6.0 have been corrected. The supporting documentation for the closure of the CARs is contained in Attachment 2. Details of audit activities, including specific objective evidence reviewed, are described below and are documented in the attached B6 checklist. The B6 checklist identifies the LANL/CCP program documents and procedures in which the WAP requirements are met. Attachment 3 contains examples of the objective evidence reviewed during the audit. A list of LANL/CCP procedures evaluated during the audit is provided in Attachment 4.

5.2 Technical Activities

Each technical area audited is discussed in detail in the following sections. The objective evidence used to assess compliance with the WAP is cited briefly (and in detail on the checklist), and the assessment results are provided.

Objective evidence was selected and reviewed to evaluate the implementation of the associated characterization activities. Batch data reports (BDRs), sampling records, and training documentation for TRU Waste Characterization Program (TWCP) personnel were included in the evaluation. The audit included direct observation and/or a demonstrated walk-through of waste characterization activities such as RTR and WWIS data entry. Each characterization process involves:

- Collecting raw data
- Collecting quality assurance/quality control (QA/QC) samples or information
- Reducing data to a useable format, including a standard report
- Review of the report by the data generation facility and the Site Project Office (SPO)
- Comparing the data against program DQOs
- Reporting the final waste characterization information to the WIPP

Each checklist question that could not be satisfactorily answered resulted in an audit deficiency. A CAR was prepared to document those items not adequately addressed during the audit. A CAR allows CBFO to track LANL/CCP efforts to remediate the identified deficiency. CBFO CARs 04-021 and 04-022 are addressed in section 6.1. All WAP-related CARs have been satisfactorily closed.

5.2.1 Table B6-1 WAP Checklist

The B6-1 WAP checklist addresses program requirements from an overall management perspective and the validation of the data at the site project level. It documents the verification that the waste characterization strategy, as defined in the WAP, is implemented by using controlled procedures. Table B6-1 documents the site project-

level reviews of the data collected as a result of the waste characterization implementing procedures. This audit was performed to assess the ability of LANL/CCP to characterize Summary Category Group S3000 homogenous solids waste and S5000 debris waste. Objective evidence was reviewed as part of this assessment and utilized in the completion of the table. The objective evidence included completed BDRs (completed through the SPO review), sampling records, and training documentation for LANL/CCP personnel. In addition, procedures and objective evidence were reviewed to ensure that LANL/CCP could adequately perform data reconciliation and properly prepare a WSPF.

Objective evidence was reviewed to make a determination of the adequacy of the SPO V&V procedures. Evidence included BDRs from each of the waste characterization activities.

The flow of data from the point of generation to inclusion in the WSPF for each characterization technique was reviewed to ensure that all applicable requirements were captured in the site operating procedures. The material in this section is also addressed in more detail in the attached checklists, where the specific procedures audited and the objective evidence reviewed are identified.

Compliance with the characterization requirements of the WAP was demonstrated through documentation and by demonstrating characterization activities. The following BDRs (included in Attachment 3) were reviewed as objective evidence of completion of characterization activities: LA04-HGAS/LA-002, LA04-HGAS/LS-001, LA-RTR-2-04-0003 and LA VE 54 0003.

The project-level data V&V process was evaluated by reviewing BDRs LA04-HGAS/LA-001, LA-RTR1-04-0002, ALD03021, LA VE50 0001, and LAHS0327041 (included in Attachment 3).

The AK process and the AK auditable record were reviewed in detail for Summary Category Group S3000 and S5000 waste streams. The AK record was reviewed to demonstrate that the required information was present and correctly interpreted. The BDRs cited above were used to demonstrate the confirmation of AK, the reconciliation of DQOs, the preparation of a WSPF, and the transmittal of data to WIPP using the WWIS.

Draft WSPFs LA-MIN03.NC.001 and LA-NHD01.001 and the summarized characterization information related to them were reviewed to establish the objective evidence for reporting waste characterization information to WIPP. The forms were completed using information from current characterization processes. As required, an actual WSPF will be prepared and submitted to CBFO prior to waste shipment. The form will be sent to CBFO for review and approved when the waste streams have been fully characterized and LANL/CCP is approved to ship waste.

The audit team identified a condition adverse to quality that resulted in the issuance of CBFO CAR 04-022: The Site Project Quality Assurance Officer (SPQAO)

Nondestructive Examination (NDE) Project Level Validation Checklist and Summary Form were not being completed consistently. The checklist has several questions that are answered by checking blocks with Yes or No answers. The assigned SPQAO had checked these questions differently in BDRs where the BDR activities and results were the same (BDRs RTR1-04-001, RTR1-04-004, and RTR2-04-003).

The audit team concluded that these areas were adequate, satisfactorily implemented and effective.

5.2.2 Table B6-2 Solids and Soils/Gravel Sampling Checklist

This audit was performed to assess the ability of LANL/CCP to characterize Summary Category Groups S3000 and S5000 waste streams.

Solids sampling and analysis will be performed by the Idaho National Engineering and Environmental Laboratory (INEEL) under the umbrella of their CBFO certified program. INEEL will perform these functions and perform generation-level data V&V. The results of the analysis will be provided to LANL/CCP for project-level data V&V.

Soils/gravel waste streams were not included in the audit scope; therefore, no Summary Category Group S4000 waste will be characterized for disposal at WIPP under the current LANL/CCP program.

The audit team concluded that these areas were adequate, satisfactorily implemented, and effective.

5.2.3 Table B6-3 Acceptable Knowledge Checklist

This audit was performed to assess the ability of LANL/CCP to characterize Summary Category Groups S3000 and S5000 waste streams.

Items on the AK checklist are intended to ensure that LANL/CCP has an AK process in place to:

- Train data collection personnel
- Assemble data into a coherent narrative that describes the waste generation process and constituents of the waste
- Segregate the waste into like waste streams
- Provide Resource Conservation and Recovery Act (RCRA) characterization for the waste streams
- Confirm characterizations using testing and sampling and analysis
- Provide an auditable set of records to support characterization

The following procedures related to the AK process were evaluated:

- CCP-TP-001, *CCP Project Level Data Validation and Verification*
- CCP-TP-002, *CCP Reconciliation of DQOs and Reporting Characterization Data*
- CCP-TP-003, *CCP Sampling Design and Data Analysis for RCRA Characterization Data*
- CCP-TP-005, *CCP Acceptable Knowledge Documentation*
- CCP-TP-030, *CCP TRU Waste Certification and WWIS Data Entry*

AK summary documentation contained in the auditable record and container-specific information were reviewed. Traceability of the AK documentation was accomplished by a review of CCP-AK-LANL-004 and CCP-AK-LANL-005. The summary documents and supporting documentation identify the waste stream and point of generation for the containers.

Several of the references were selected to ensure that they are included in the auditable record and to ascertain if the source documents support AK determinations. These sources include such items as published reports, process flow diagrams, interviews with site personnel concerning the use of hazardous materials, and reports of previous waste characterization sampling and analysis efforts. The review of these references resulted in a determination that limitations of the AK documentation have been documented as required by the WAP.

The AK process was evaluated by reviewing AK summaries CCP-AK-LANL-004 and CCP-AK-LANL-005. The auditable record was searched to ensure that the cited references were available and that the reviewer could reach the same hazardous waste determination as presented in the AK summary document. Information from the debris waste and homogenous solids waste streams was selected, and the AK information was traced from the summary through the AK source document reviews to the original records. The information for seven containers (three sludge drums [LAS860306, LAS870643, and LAS870645], and four debris drums [LA00000059019, LA00000059032, LA00000059043, and LA00000059047]) was traced to verify characterization as determined by the AK. The information was available in the record files and supported the AK determination. The AK process includes provisions to identify and resolve any waste stream information that conflicts with what is expected (confirmation processes).

Additional documentation supporting AK summary documents and AK source document review summaries are contained in Attachment 3 to support the entries in Table B6-3.

Draft copies of a WSPF, a characterization information summary, a DQO, an AK confirmation checklist, and an AK accuracy report were prepared. Examples of the resolution of discrepancies were also reviewed as objective evidence of the process for reporting characterization information to the WIPP.

The procedures used by LANL/CCP to assemble, evaluate, document, and reconcile testing, sampling, and analysis results were reviewed for adequacy and implementation during the audit. The specific AK criteria evaluated included AK procedure content, the specific requirements relative to retrievably stored debris waste and homogeneous solids waste, and evaluation of the AK summary to ensure inclusion of all mandatory information required by the WAP.

The audit team evaluated reports and records used to document the basis of the AK process. The reports were determined to be satisfactory and the QA records were properly maintained. The AK documentation reviewed and copies of pages used for objective evidence are included in Attachment 3.

The audit team offered one Recommendation for improvement: several changes need to be made to the AK summary reports for waste streams LA-NHD01.001 and LA-MIN03-NC.001 to improve clarity (Recommendation 1).

The audit team concluded that the LANL/CCP AK process is adequate and satisfactorily implemented, and the process is effective.

5.2.4 Table B6-4 Headspace Gas Checklist

This audit was performed to assess the ability of LANL/CCP to characterize Summary Category Groups S3000 and S5000 waste streams.

Headspace gas sampling and analysis operations at LANL/CCP were evaluated for the collection and analysis of samples and the cleaning and testing of SUMMA[®] canisters. The following procedures were evaluated:

- CCP-TP-043, *CCP Chain of Custody for SUMMA[®] Canister Sampling Using the INEEL Lab*
- CCP-TP-056, *CCP HSG Performance Demonstration Plan*
- CCP-TP-093, *CCP Sampling of TRU Waste Containers*
- CCP-TP-098, *CCP Installing of the NucFil HSG Sample Port*
- CCP-TP-127, *CCP Canister Cleaning Using the ENTECH 3100 Canister Cleaning System*
- CCP-TP-128, *CCP TRU Waste Container HSG Analysis (Entech-Agilent)*
- CCP-TP-129, *CCP HSG Sampling and Analysis Batch Data Report Preparation (Entech-Agilent)*
- CCP-TP-130, *CCP Entech Canister Gauge Leak Test*
- CCP-TP-131, *CCP Manual Headspace Gas Sampling of TRU Waste Containers for the Entech-Agilent Analytical System*

Audit activities included observation of sampling and analysis, interviews with personnel, and review of available HSG sampling and analysis BDRs. BDRs LA04-HGAS/LS-001, LA04-HGAS/LS-002, LA04-HGAS/LA-001, LA04-HGAS/LA-002, and LAHS032701 (for samples shipped to INEEL) were reviewed to evaluate sampling and analysis methods against WAP requirements. The audit team concluded that LANL/CCP is properly implementing the HSG sampling and analysis procedures and collecting samples into SUMMA[®] canisters in accordance with WAP requirements.

During the evaluation of sampling activities, the audit team also evaluated canister cleaning, leak-checking activities, installation of NucFil HSG sample ports, and the implementation of chain-of-custody activities. Documentation specific to these activities (e.g., chain-of-custody forms, certification of cleanliness, calibration records, field maintenance, and instrument logbooks) was reviewed to ensure that the sampling and analysis operations and activities were being properly recorded. It was determined that these activities were conducted in accordance with QA requirements specified in the WAP. Documentation reviewed is included in the BDRs contained in Attachment 3.

The assessment of the sampling activities also included the review of LANL/CCP processes for the collection of field reference standards and equipment blanks. These samples are collected in accordance with CCP-TP-128, *CCP TRU Waste Container HSG Analysis (Entech-Agilent)*, and CCP-TP-131, *CCP Manual Headspace Gas Sampling of TRU Waste Containers for the Entech-Agilent Analytical System*.

Sampling and analysis BDRs were reviewed to determine that data associated with sampling and analysis activities were properly collected, documented, and validated and verified at the data-generation level. The independent technical review, technical supervisor review, and data-generation QA officer review were done in accordance with CCP-TP-129, *CCP HSG Sampling and Analysis Batch Data Report Preparation (Entech-Agilent)*.

The Table B6-4 HSG Checklist was completed by assessing the implementation of the sampling and analysis procedures. Analysis operations were evaluated and records were reviewed. Specific information regarding the evaluation and the records reviewed is described in the objective evidence column of Table B6-4.

Equipment is controlled to ensure that it does not contaminate the sample. Sample integrity is protected using procedures CCP-TP-128, *CCP TRU Waste Container HSG Analysis (Entech-Agilent)*, CCP-TP-131, *CCP Manual Headspace Gas Sampling of TRU Waste Containers for the Entech-Agilent Analytical System*, CCP-TP-127, *CCP Canister Cleaning Using the ENTECH 3100 Canister Cleaning System*, and CCP-TP-043, *CCP Chain of Custody for SUMMA[®] Canister Sampling Using the INEEL Lab*. CCP-TP-127 and CCP-TP-043 describe the requirements for the use of chain-of-custody forms. Copies of the chain-of-custody forms and the sample canister information documents are included in the BDRs.

Review of sample and analysis results to ensure that they meet program quality assurance objectives (QAOs) is controlled by procedure CCP-TP-129, *CCP HSG*

Sampling and Analysis Batch Data Report Preparation (Entech-Agilent), and CCP-TP-001, *CCP Project Level Data Validation and Verification*. HSG sample and analysis BDRs were reviewed to ensure that both data-generation level and project-level V&V activities were properly performed.

The audit team concluded that the LANL/CCP HSG processes are adequate and satisfactorily implemented, and the process is effective.

5.2.5 Table B6-5 Radiography Checklist

This audit was performed to assess the ability of LANL/CCP to characterize Summary Category Groups S3000 and S5000 waste streams.

CCP radiography operations are performed using real-time systems, which meet the system specifications identified in the WAP. LANL/CCP operations are performed using two mobile RTR systems. The systems have controls to allow the operator to enhance the image quality of the radiograph, provide narration with the video, rotate the drum as it is imaged, enlarge the image, and pan up and down the container. These systems allow personnel to view drums while recording the examination on audio/videotape.

The Table B6-5 Radiography Checklist was completed by assessing the following operating procedures:

- CCP-TP-028, *CCP Radiographic Test and Training Drum Requirements*
- CCP-TP-053, *CCP Standard RTR Inspection Procedure*

During audit team activities, RTR operations for both units were observed, videotapes were reviewed, RTR personnel were interviewed, and the documentation resulting from these activities was evaluated. RTR testing BDRs LA-RTR1-04-0002, LA-RTR1-04-0003, LA-RTR2-04-0002, and LA-RTR2-04-0003 were reviewed and are included in Attachment 3.

The BDRs were reviewed to evaluate LANL/CCP's compliance with the WAP and with CCP-TP-053, *CCP Standard RTR Inspection Procedure*. This procedure controls the data generation-level independent technical review, the technical supervisor review, and the QA officer review. The BDRs reviewed to the requirements of these procedures were found to be in compliance with the WAP requirements for data generation-level review.

Radiography equipment maintenance and daily checks were evaluated in accordance with WAP requirements, and the RTR procedures were found to be acceptable and properly implemented. Radiographic results are being properly reported on standard forms and reviewed, as required by the WAP. Copies of the forms are included in the BDRs in Attachment 3.

Training course materials and the RTR test drums were reviewed to ensure they are in accordance with WAP requirements. Training records for RTR operators were also evaluated.

The audit team identified two deficiencies that resulted in the issuance of a CBFO CAR (CAR 04-021). Both deficiencies were related to the failure of RTR operations to issue nonconformance reports (NCRs). The first was related to the failure to issue an NCR when lead was found in a drum from a non-hazardous waste stream. The second was related to the failure to issue an NCR when the container contents did not match the waste matrix code identified on the RTR data sheet. The audit team identified one minor deficiency that was corrected during the audit (CDA 1). In one BDR the image test pattern had not been copied onto the QA record copy compact disc (CD). The image test pattern was recorded on the hard drive in RTR Unit 2, and was copied onto the record copy CD during the audit.

The audit team identified one condition that, if left uncorrected, could result in a condition adverse to quality (Observation 1). The Observation deals with the practices for determining the basis of volume utilization percentage (VUP) for containers undergoing RTR. RTR operators base this determination on the top of the liner, not on the top of the waste. VE operators base their VUP estimate on the top of the waste in the container. The estimation of VUP should be consistent between RTR and VE operations. No Recommendations were made to LANL/CCP management in this area.

The audit team concluded that the LANL/CCP radiography processes are adequate and satisfactorily implemented, and the process is effective.

5.2.6 Table B6-6 VE Checklist

This audit was performed to assess the ability of LANL/CCP to characterize Summary Category Groups S3000 and S5000 waste streams.

LANL/CCP VE activities were evaluated by observing operations, reviewing audio/videotapes, evaluating VE BDRs, and interviewing VE personnel. The audit team reviewed a total of eight VE BDRs. The audio/videotapes for BDRs LA VE 50 0002, LA VE 50 0004, LA VE 54 0001, and LA VE 54 0003 were reviewed and the BDRs are included in Attachment 3.

The audit team observed the VE of drum LAS59399 (debris) in the Waste Characterization, Reduction, and Repackaging Facility (WCCRF) at TA-50 and drum LAS850162 (homogeneous solids) in Dome 231, Area G, TA-54. The VE procedure used by LANL/CCP was CCP-TP-113, *CCP Standard Waste Visual Examination and Repackaging*. This procedure provides the instructions for VE as a quality control (QC) check on radiography, the option of performing VE in lieu of radiography, and the VE technique.

The audit team evaluated CCP-TP-003, which is used to randomly select drums to confirm radiography results. It was confirmed that the selection of drums for VE was

random and the drums were selected from the available drum population in accordance with the WAP requirements.

The training course content for operators and VE experts was reviewed to verify that all WAP requirements were included. LANL/CCP VE training requirements are contained in CCP-TP-113. Training files were reviewed for VE experts and operators to verify that individuals responsible for performing the visual examination of drums have been properly trained and qualified.

The audit team determined that the calculation of the initial S3000 and S5000 miscertification rates had not been completed at the time of the audit because LANL/CCP had not been in operation long enough to have performed VE for the required number of containers.

The audit team identified one condition that, if left uncorrected, could result in a condition adverse to quality (Observation 2). When LANL/CCP processes a container with a deficiency identified by radiography, in this case non-punctured liner lids, the NCR issued by radiography should be referenced in the BDRs so that it is clear that VE did not identify a miscertification by radiography.

The audit team concluded that the LANL/CCP visual examination processes are adequate, satisfactorily implemented, and effective.

6.0 SUMMARY OF DEFICIENCIES

6.1 Corrective Action Reports

During the audit, the audit team may identify conditions adverse to quality (CAQ) and document such conditions on corrective action reports (CARs).

Condition Adverse to Quality (CAQ) – Term used in reference to failures, malfunctions, deficiencies, defective items, and nonconformances.

Significant Condition Adverse to Quality – A condition which, if uncorrected, could have a serious effect on safety, operability, waste confinement, TRU waste site certification, compliance demonstration, or the effective implementation of the QA program.

6.1.1 CBFO CAR 04-021

Drum LA00000059064 in RTR BDR LA-RTR2-04-0002 contained lead. The waste undergoing RTR was waste from a non-hazardous waste stream, but no NCR was generated. In addition, several containers in RTR BDR LA-RTR1-04-0002 were listed with a matrix code of S5300 on the RTR data sheet, but the containers contained greater than 50% homogeneous solids (S3000). No NCR was generated, even though the physical form of the waste did not match the waste matrix code.

An NCR was written (LANL-0707-04) to reject drum LA00000059064 due to the presence of lead in a non-hazardous waste stream. Another NCR was written (LANL-0614-04) to document and identify corrective actions for the incorrect waste matrix code issue.

BDR LA-RTR1-04-0002 was revised to reflect the correct waste matrix code (S3120). The remaining BDRs were reviewed to determine if these issues were present. No additional instances were found. A retraining briefing was developed and presented to the RTR Operations Team.

6.1.2 CBFO CAR 04-022

The SPQAO NDE Project Level Validation Checklists and Summary Forms were not being completed consistently. The checklist has several questions that are answered by checking blocks with Yes or No answers. The assigned SPQAO had checked these questions differently in BDRs where the BDR activities and results were the same (BDRs RTR1-04-001, RTR1-04-004, and RTR2-04-003).

All LANL/CCP BDRs were reviewed and corrected and then re-reviewed at the project level to correct the checklist deficiencies. The SPQAO qualification for the specific individual involved was revoked. Training sessions were conducted for LANL/CCP personnel to stress the importance of attention to detail and reiterate the requirements for the proper documentation of completed work.

6.2 **Deficiencies Corrected During the Audit (CDAs)**

During the audit, the audit team may identify CAQs. Using the following definitions, the audit team members and the Audit Team Leader (ATL) evaluate the CAQs to determine if they are significant:

CAQ – Term used in reference to failures, malfunctions, deficiencies, defective items, and nonconformances.

Significant CAQ – A condition which, if uncorrected, could have a serious effect on safety, operability, waste confinement, TRU waste site certification, compliance demonstration, or the effective implementation of the QA program.

Once a determination is made that the CAQ is not significant, the audit team member, in conjunction with the ATL, determines if the CAQ is an isolated case requiring only remedial action and therefore can be corrected during audit (CDA). Upon determination that the CAQ is isolated, the audit team member, in conjunction with the ATL, evaluates/verifies any objective evidence/actions submitted or taken by the audited organization and determines if the condition was corrected in an acceptable manner. Once it has been determined that the CAQ has been corrected, the ATL categorizes the condition as a CDA according to the definition below.

CDAs – Isolated deficiencies that do not require a root cause determination or actions to preclude recurrence. Correction of the deficiency can be verified prior to the end of the audit. Examples include one or two minor changes required to correct a procedure (isolated), one or two forms not signed or not dated (isolated), and one or two individuals that have not completed a reading assignment.

The audit team identified one WAP-related condition adverse to quality that was considered an isolated deficiency and was corrected during the audit:

CDA 1

The image test pattern from RTR BDR LA-RTR2-04-0002 had not been recorded on the QA record copy CD.

The audit team verified that the image test was performed and was recorded on the hard drive in RTR Unit #2. The image test pattern was copied to the QA record copy CD.

7.0 SUMMARY OF OBSERVATIONS AND RECOMMENDATIONS

During the audit, the audit team may identify potential problems or suggestions for improvement that should be communicated to the audited organization. The audit team member, in conjunction with the ATL, evaluates these conditions and classifies them as Observations or Recommendations using the following definitions:

Observation – A condition that, if not controlled, could result in a CAQ.

Recommendations – Suggestions that are directed toward identifying opportunities for improvement and enhancing methods of implementing requirements.

Once a determination is made, the audit team member, in conjunction with the ATL, categorizes the condition appropriately.

7.1 Observations

The following Observations were provided to LANL/CCP management:

Observation 1

Both VE and RTR operators estimate the VUP during container examination. The method for estimating this value is not specified in the procedures. RTR operators estimate the VUP based on the top of the drum liners and the VE operators estimate the VUP based on the top of the waste in the container. LANL/CCP should ensure the RTR and VE operators use a consistent method to estimate VUP. LANL/CCP should also consider using the WWIS terminology "Fill Factor" instead of VUP.

Observation 2

VE BDRs LA VE 54 0001 and LA VE 54 0002 included drums that did not have punctured rigid liner lids. The condition was identified by RTR and NCRs were properly issued. The VE BDRs should reference the RTR NCRs so it is clear that the non-punctured liners did not require that VE operations issue NCRs. The liners were vented during VE.

7.2 Recommendations

The WAP-related Recommendation provided to LANL/CCP management during the audit is discussed below.

Recommendation 1

The AK audit team recommended that several changes be made to the AK summary reports for waste streams LA-NHD01.001 and LA-MIN03-NC.001 to improve clarity.

8.0 LIST OF ATTACHMENTS

| | |
|---------------|--|
| Attachment 1: | Personnel Contacted During the Audit |
| Attachment 2: | Corrective Action Supporting Documentation |
| Attachment 3: | Objective Evidence |
| Attachment 4: | List of Audited Documents |

PERSONNEL CONTACTED DURING THE AUDIT

| NAME | TITLE/ORG | PRE-AUDIT MEETING | CONTACTED DURING AUDIT | POST AUDIT MEETING |
|--------------------|--------------------------------|-------------------|------------------------|--------------------|
| Adams, Andrew | VE Operator Trainee (LANL/CCP) | | X | X |
| Anderson, Stephan | RCT/LANL (CCP) | | X | |
| Anghel, Ioana | HSG Chemist (LANL/CCP) | | X | |
| Apperson, Courtney | LANL | | | X |
| Aragon, Israel | Drum Sampler (LANL/CCP) | X | X | |
| Baker, Shannan | LANL | | | X |
| Baros, Ricky | VE Operator (LANL/CCP) | | X | |
| Becker, Cindi | Training (CCP) | | X | |
| Bernel, Cory | RCT (LANL/CCP) | | X | |
| Doherty, Mark | AKE/SPM (CCP) | X | X | |
| Drake, Tracy | Records Analyst (CCP) | | X | X |
| Ecclesine, Amy | LANL | X | | |
| Estill, Wesley | AKE (CCP) | | | X |
| Fisher, AJ | Project QA (CCP) | X | X | |
| Fitzgerald, Randy | AKE (CCP) | X | X | |
| Freeze, Deborah | Training Spec (CCP) | X | X | |
| French, Sean | LANL | X | | |
| Galle, Lane | HGS (CCP) | | X | |
| Garcia, Joseph | HSG Sampler (LANL/CCP) | X | X | |
| Garcia, Mary Ann | LANL | | | X |
| Gibson, Yvonne | LANL | | | X |
| Gran, John | SPQAO (CCP) | X | X | |
| Granzow, Howard | LANL | | | X |
| Gutterrez, Ben | AKE (CCP) | | | X |
| Haar, Dave | Deputy Manager (CCP) | X | X | X |
| Hardesty, Bill | HSG Chemist (LANL/CCP) | | X | |
| Hargis, Ken | LANL | | | X |

| PERSONNEL CONTACTED DURING THE AUDIT | | | | |
|--------------------------------------|--------------------------------|-------------------|------------------------|--------------------|
| NAME | TITLE/ORG | PRE-AUDIT MEETING | CONTACTED DURING AUDIT | POST AUDIT MEETING |
| Hedahl, Tim | CCP Manager (CCP) | X | | X |
| Huchton, Roger | LANL | X | | X |
| Jones, Robert | LANL | X | | X |
| Keeney, Christina | LANL | | | X |
| Lichliter, Kenneth | Tech. Spec. (CCP) | X | | |
| Lindahl, Peter | TSM (LANL/CCP) | X | | X |
| Lopez, Jerry | WDS (LANL/CCP) | | X | |
| Lopez, Joshua | WPS Tech. (LANL/CCP) | | X | |
| McTaggart, Kevin | HSG (CCP) | | X | |
| Maupin, James | SPQAO (CCP) | X | X | |
| Marczak, S. | HSG Op/Chemist (LANL/CCP) | | X | |
| Martinez, Harold | RCT (LANL/CCP) | | X | |
| Martinez, Leon | NDE Operator (LANL/CCP) | | X | |
| Martinez, Paul | NDA/NDE Team Leader (LANL/CCP) | X | X | X |
| Melton, Jesse | HSG SME (CCP) | | X | |
| Montoya, Andrew | LANL | | | X |
| Montoya, Rick | LANL | | X | |
| Miller, J. T. | HSG RCT (LANL/CCP) | | X | |
| Mojica, Lee | NDA Tech (LANL/CCP) | | X | X |
| Mojica, Tommy | VE Operator/Expert (LANL/CCP) | | X | |
| Nunz, James | WM Mgr/LASO DOE | | | X |
| Osborne, Estela | Document Services (CCP) | X | | |
| Orban, Jim | LANL | | | X |
| Pearcy, Sheila | Lead Record Custodian (CCP) | X | X | X |
| Penela, Eric | Gen Mgr/MCS | X | | |
| Peterman, Sue | STR/LANL | X | X | X |

| PERSONNEL CONTACTED DURING THE AUDIT | | | | |
|--------------------------------------|--------------------------------|-------------------|------------------------|--------------------|
| NAME | TITLE/ORG | PRE-AUDIT MEETING | CONTACTED DURING AUDIT | POST AUDIT MEETING |
| Porter, Larry | SPM (CCP) | X | X | |
| Poths, Harold | NDA SME (LANL/CCP) | | X | X |
| Powell, Mark | SQAO (LANL/CCP) | X | X | |
| Riggs, Matt | LANL | X | | X |
| Romero, Bobby | Glovebox Team Lead (LANL/CCP) | X | X | |
| Romero, Myrna | LANL | | | X |
| Root, Wesley F. | VPM (CCP) | X | X | |
| Schaffer, Steve | AKE (CCP) | X | X | |
| Sheridan, Pat | LANL | X | | |
| Smith, Deborah | Weston | | | X |
| Stepzinski, Chuck | Document Services (CCP) | X | X | |
| Stroble, J. R. | WCO (CCP) | | X | |
| Sullivan, Jeri | HSG Op/Chemist (LANL/CCP) | | X | |
| Trujillo, Barbara | WWIS Data Entry/WCO (LANL/CCP) | | X | X |
| Valdez, Joe | VE Operator (LANL/CCP) | | X | |
| Vancil, Sherri | DOE Albuquerque | X | X | X |
| Vecker, Barbara | LANL | | | X |
| Vigil, Christopher | WDS (LANL/CCP) | | X | |
| Vigil, Jack | NDE Op/SME (LANL/CCP) | X | X | X |
| Voss, Susan | LANL | X | X | |
| Vozella, Joe | LASO | | | X |

Personnel Contacted During the Audit by Area

| | |
|--|---|
| Nonconformances | A. J. Fisher John F. Gran Peter Lindahl Sheila Pearcy |
| Training | Deborah Freeze Cindi Becker |
| Records | Sheila Pearcy Chuck Stepzinski Estela Osborne |
| Acceptable Knowledge | David Haar Mark Doherty Wesley Estill Randy Fitzgerald Ben Gutterrez Steve Schaffer |
| Headspace Gas & Gas VOCs Sampling and Analysis | Bill Hardesty Amy Ecclesine Jerri Sullivan J. T. Miller S. Marczak Joshua Lopez Chris Vigil Jerry Lopez Tommy Mojica Joseph Garica Jessie L. Melton Scott Miller Isreal Aragon Lane Galle Kevin McTaggart |
| Visual Examination | Andrew Adams Susan Voss Robert Jones Bobby Romero Ricky Barus Rick Montoya Joe Valdez Tommy Mojica Cory Bernal Stephen K. Anderson Sheri Vancil Harold Martinez |
| Real-Time Radiography | Larry Porter |

| | |
|---|--|
| | Paul Martinez Leon Martinez Jack Vigil |
| WIPP Waste Information System (WWIS Data Entry) | J. R. Stroble Barbara Trujillo |
| Waste Certification/Project Level & Data Generation Level Data Validation & Verification | Mark Doherty A. J. Fisher |

LANL/CCP DOCUMENTS EVALUATED

| Number | Procedure Number/Rev | DOCUMENT TITLE |
|---|-------------------------|--|
| CCP PROGRAM DOCUMENTS | | |
| 1 | CCP-PO-001, R8 | CCP Transuranic Waste Characterization Quality Assurance Project Plan |
| 2 | CCP-PO-002, R 9 | CCP Transuranic Waste Certification Plan |
| 3 | CCP-PO-008, R4 | CCP Quality Assurance Interface with the WTS Quality Assurance Program |
| 4 | CCP-PO-012, R3 | LANL/CCP Interface Document |
| 5 | LANL/WTS SOW | Los Alamos National Laboratory (LANL) Statement of Work for Characterization of LANL TRU Waste |
| CCP QUALITY ASSURANCE PROCEDURES | | |
| 6 | CCP-QP-002, R15 | CCP Training and Qualification Plan |
| 7 | CCP-QP-004, R5 | CCP Corrective Action Management |
| 8 | CCP-QP-005, R9 | CCP TRU Nonconforming Item Reporting and Control System |
| 9 | CCP-QP-006, R5 | CCP Corrective Action Reporting and Control |
| 10 | CCP-QP-008, R9 | CCP Records Management |
| 11 | CCP-QP-010, R11 | CCP Document Preparation, Approval and Control |
| 12 | CCP-QP-011, R4 | CCP Notebooks and Logbooks |
| 13 | CCP-QP-019, R2 | CCP Quality Assurance Reporting to Management |
| 14 | CCP-QP-021, R3 | CCP Surveillance Program |
| 15 | CCP-QP-028, R5 | CCP Records Filing, Inventorying, Scheduling, and Dispositioning |
| CCP TECHNICAL PROCEDURES | | |
| 16 | CCP-TP-001, R10 | CCP Project Level Data Validation and Verification |
| 17 | CCP-TP-002, R13 | CCP Reconciliation of DQOs and Reporting Characterization Data |
| 18 | CCP-TP-002, A2, R0 | CCP Waste Stream Profile Form |
| 19 | CCP-TP-003, R14 | CCP Sampling Design and Data Analysis for RCRA Characterization |
| 20 | CCP-TP-005, R13 | CCP Acceptable Knowledge Documentation |
| 21 | CCP-TP-028, R 2 | CCP Radiographic Test and Training Drum Requirements |
| 22 | CCP-TP-030, R11 | CCP TRU Waste Certification and WWIS Data Entry |
| 23 | CCP-TP-033, R5 | CCP Shipping of CH TRU Waste |
| 24 | CCP-TP-043, R1 | CCP Chain of Custody for SUMMA® Canister Sampling Using the INEEL |
| 25 | CCP-TP-053, R0 | CCP Standard Real-Time Radiography (RTR) Inspection Procedure |
| 26 | CCP-TP-056, R2 | CCP HSG Performance Demonstration Plan |
| 27 | CCP-TP-093, R2 | CCP Sampling of TRU Waste Containers |
| 28 | CCP-TP-098, R2 | CCP Installing of the NucFil HSG Sample Port |
| 29 | CCP-TP-106, R1 | CCP Headspace Gas Sampling Batch Data Report Preparation |
| 30 | CCP-TP-113, R1 | CCP Waste Visual Examination |
| 31 | CCP-TP-120, R1 | CCP Container Management |
| 32 | CCP-TP-127, R0 | CCP Canister Cleaning Using the ENTECH 3100 Canister Cleaning System |
| 33 | CCP-TP-128, R1 | CCP TRU Waste Container HSG Analysis (Entech-Agilent) |
| 34 | CCP-TP-129, R0 | CCP HSG Sampling and Analysis Batch Data Report Preparation (Entech-Agilent) |
| 35 | CCP-TP-130, R0 | CCP Entech Canister Gauge Leak Test |
| 36 | CCP-TP-131, R0 | CCP Manual Headspace Gas Sampling of TRU Waste Containers for the Entech-Agilent Analytical System |